plans. Strengthening efforts are best implemented when preceded by an institutional needs assessment, including actions oriented to improve both human capacity (skills, information, incentives) and physical resources, when appropriate. The latter may include, for example, water quality monitoring equipment and/or computer hardware and software for information data banks.

In Bermejo, the project supported the equipping and training of technical and managerial personnel in governmental and civil society organizations related to natural resource management, particularly water. Specifically, the project contributed to the purchasing and upgrading of equipment for the automatic acquisition and remote transmission of hydro-meteorological data. This will not only strengthen the network stations currently in operation in Argentina, but will also expand it into a bi-national tool that will allow both countries to monitor water quality and sediment loads in the entire basin and anticipate flood events.

Similarly, and with very limited investments, the project co-financed the implementation of two pilot-scale waste water treatment plants in small rural settlements, helping the local community and prefecture efforts for the environmental clean-up of the Guadalquivir River, a Bermejo tributary located in the Upper basin. Technical strengthening processes have also been conducted with different sectoral ministries in involved provinces, resulting in an enhanced capacity to lead and coordinate public and civil society efforts in IWRM. In the province of Salta, for example, support provided to the Environmental Secretariat helped put forward the declaration of the Yungas Biosphere Reserve, recently sanctioned by UNESCO.

PUBLIC PARTICIPATION AND STAKEHOLDER INVOLVEMENT

In low-income countries that struggle to alleviate poverty, it is no surprise to find an overall lack of interest in the long-term gains attributed to environmental issues like soil conservation and biodiversity protection, or to the benefits of carrying out activities upstream to benefit populations downstream. Overall, individual interests take precedent over common goals, and local perceptions dominate regional concerns. Even with appropriate legal and institutional frameworks, public participation frequently materializes only after an awareness of concrete and short-term benefits is realized.

Therefore, it is imperative while designing a water project that conditions are established so as to create a common understanding of the common concerns that warrant action from all the stakeholders.

Technical dialogues over specific issues, training and skills development, continued workshops and seminars, public audiences, hands-on pilot demonstration projects, and use of electronic means are all tools that can help communities and stakeholder groups understand, relate to, join, and support IWRM efforts.

The incremental nature of the GEF-International Waters projects allows for the establishment of a participatory process by which multiple stakeholders gradually engage in project activities. In OAS' experience, participation of relevant stakeholders from the earliest stages of project formulation—from the identification of the environmental issues, to the design of strategies and implementation of on-the-ground-actions—is key to trigger changes in people's perceptions, attitudes, and behaviors, the necessary keystones in IWRM.

In the São Francisco project, the constant and enthusiastic involvement of a broad range of basin stakeholders has assured the consistency, continuity, and legitimacy of the TDA process, creating a high probability for a successful and sustainable implementation of the SAP. The bottom-up approach for river basin planning and management provided the opportunity for the creation and implementation of effective structures, legal controls, and fiscal instruments to mitigate the degrading land and water management practices affecting the Basin and its coastal zone. Furthermore, by creating the São Francisco River Basin Committee, the project supported the establishment of a permanent mechanism for public participation in the basin.

In the San Juan and Bermejo projects, direct responsibility for the execution of pilot demonstration projects by key stakeholders promoted a general acceptance of the projects and encouraged active participation. The request for project ideas dealing with developmental and environmental issues provided an opportunity for local communities to present their priorities, helping to shape the final SAP proposals. During the preparatory phase of the Bermejo project, the dialogues and meetings conducted between provincial institutions concerning the elaboration of the first basin-wide digital cartography provided for the use of provincial states and local universities generated common terminology and an increased awareness, in political and scientific circles, of the environmental issues affecting the basin. These efforts resulted in a strong and active local participation (and co-financing) during the implementation phase, helping advance a basin vision and IWRM concepts in the region.

CONCLUSIONS

Lessons learned from OAS experience in the region validate the use of scientific methods to identify and address critical issues, highlight the importance of dialogue and coordination between institutions, demonstrate the critical role of river basin committee, stress the urgent need for institutional strengthening of local resource management, and underscore the significance of public participation and stakeholder involvement.

Experience also shows that having laws, policies and institutions in place will not necessarily solve the problems affecting water resources in the region. As critical as these elements are, only minor gains will be accomplished if there are not sufficient incentives for individuals to change their perceptions and attitudes towards the conservation and sustainable use of water. Integrated approaches linking environmental and poverty issues and programs and projects with goals and objectives proportionate to existing capacities seem to provide the best vehicles for promoting IWRM in the region.

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—Transboundary Aquifers
—Biodiversity Conservation
—Environmental Assessments of Trade
—Renewable Energy
—Natural Hazard Mitigation

Unit for Sustainable Development & Environment

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Moving Forward the Water Agenda: Issues to consider in Latin America[1]

Sustainable water management has become hemispheric and worldwide priority. Consensus now exists that the problems affecting water resources are no longer related solely to the protection of a natural resource for the sake of safeguarding ecosystems and maintaining environmental conditions. Instead, building sustainable water management now forms part of a broader development strategy that encompasses anticipating and avoiding water related conflicts, addressing poverty and rural development, and designing and meeting food security and health-related concerns. In the Americas, countries understand that beyond the scarcity or abundance of water, or the complex unpredictability of its behavior, many of the problems affecting the water sector are related to issues of governance. Consequently, increasing efforts are being directed to establish the legal, political, and institutional framework to regulate the development and management of water resources. In support of these efforts, the Unit for Sustainable Development and Environment of the Organization of American States (OAS/USDE) provides countries with mechanisms for inter-governmental dialogue and cooperation (particularly on transboundary issues); promotes the exchange of information and experiences, and helps in the design, formulation, and implementation of projects related to integrated water resource management and river basin development.

Since the 1990s, USDE has worked increasingly in collaboration with other international organizations like the United Nations Environment Programme (UNEP), the World Bank, the Inter-American Development Bank (IDB), and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Since 1995, OAS/USDE has acted as the regional executing agency for several Global Environment Facility (GEF) -financed initiatives in the region, most of them related to international waters, in collaboration with UNEP and the World Bank.

These initiatives have made tangible steps in advancing the water agenda, supporting the accomplishments made in the region during the last decade in integrated water resource management. While resolving in an integrated fashion trans-boundary water issues like sediment control, challenges related to deforestation, river pollution, soil degradation, and biodiversity reduction-mechanisms for political dialogue have been established, policies and institutional reforms have been promoted, legal and organizational frameworks have been developed, and public participation and stakeholder involvement efforts have been strengthened.

TRANSBOUNDARY WATERS

In Latin America, more than 70 river basins are shared by two or more countries. 60% of the South American territory correspond to transboundary watersheds. The Amazon basin alone, which incorporates eight of 12 countries of South America, has more than 8,000 km of borders. The Guarani Aquifer, shared by Argentina, Brasil, Paraguay and Uruguay, is the largest source of fresh groundwater in the world.

Although the design and execution of each project followed the political, economic, and institutional structures of the recipient countries and the specific characteristics of the environmental issues to be resolved, there are important aspects common to all, which are critical issues to be considered for implementing integrated water resource management (IWRM) in the region. These common aspects help to advance the goals set at the Millennium Summit and at the World Summit on Sustainable Development in Johannesburg in relation to the provision of safe drinking water and access to sanitation services. These issues are presented below as lessons learned from OAS experience.

SCIENCE AND TECHNOLOGY FOR PUBLIC POLICY

In the 1960s, most regional development studies for multinational basins carried out by OAS/USDE followed a similar methodological sequence: a diagnostic of a region's problems and potentials, a preliminary development strategy, and the identification and subsequent formulation of specific investment projects. The first stage (known as Phase I) involved a natural resource survey and an analysis of the existing and projected economic and social conditions—including the definition of the productive capacity, an analysis of the occupation of space and relative development, and an inventory of projects—providing inputs for the identification of program areas and formulation of development proposals. The methodology was highly interdisciplinary in scope and unconventionally integrated in its approach and demonstrated the importance of technical information in political decision-making.

Phase I activities are embraced today as part of a Transboundary Diagnostic Analysis (TDA), a term generally associated with GEF-financed projects. By definition, the TDA is a scientific process which: (i) identifies the environmental problems in the basin; (ii) identifies the root causes of the environmental degradation through a causal chain analysis, tracing the cause-effect pathway associated with each significant environmental problem; and (iii) prioritizes the problems worth addressing, identifying appropriate

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policy corrective measures that are incorporated as part of a Strategic Action Program (SAP).

Using a highly participatory approach, TDA is effective in raising awareness about the perceived problems and in engaging local and regional stakeholders in the design and implementation of the project's objectives. Establishing a common understanding of the problems promotes community and stakeholder ownership, facilitating support for the implementation of actions.

In the San Juan project (see map on next page), a series of workshops and face-to-face consultations enabled the multidisciplinary team assembled to elaborate the TDA to compile stakeholders' concerns about water-related issues in the Basin. Through a series of iterations, these concerns were integrated with scientific data and analysis to outline the priority issues as perceived by the community. This information helped to shape the strategic actions for intervention, including the policy, institutional, and legal reforms necessary to reverse the environmental degradation process affecting the bi-national basin.

In the Bermejo project, the TDA process helped identify those areas within the upper basin with the highest rates of sediment production by erosion and the areas most susceptible to mass movements. With a total sediment load of 100 million tons per year, most of it ending in the Paraguay-Parana river systems and the Plata estuary, the findings were essential to delineate localized strategies with greater overall impact.

In the São Francisco project, the TDA provided a comprehensive river basin and coastal zone diagnostic study, producing new scientific and technical knowledge that challenged established myths related to the basin. Based on the results of the river basin and coastal zone environmental analysis, the Federal Senate made the recommendation to revise the current physiographic division of the São Francisco River Basin and establish a new limit between the lower-middle and the lower São Francisco regions.

It is worth noting that the participatory TDA processes used in these projects identified not only the critical environmental issues affecting the basin, but also—invariably—pressing socio-economic priorities as established by the basin communities (i.e. poverty alleviation, water availability, and basic health and sanitation services). In all cases, the resulting SAPs reflected an integrated sustainable development program that was not limited in scope to an environmental agenda.

ORGANIZATIONAL STRUCTURE DEVELOPMENT

Latin America has a myriad of institutions and organizations dealing with integrated water resource management. These range from large transboundary commissions, to local and regional entities, to civil society groups and community organizations. While this diversity of institutions highlights the interest in resolving shared problems, it also highlights the fragmentation and segmentation that it prevails. Few of these institutions communicate, let alone, coordinate actions. Consequently, conflicting mandates, incompatible policies, and duplication of efforts are not uncommon, particularly when dealing with inter-jurisdictional entities in local, sub-regional, national, and international settings.

In creating a proper institutional framework for sustainable water management, it is fundamental to establish mechanisms for dialogue and coordination, including not only existing water management institutions or associations, but also other sectoral entities—like agriculture, health, or energy—whose policies, regulations, and activities have an impact on water. Frequently, technical, political, and financial constraints hinder effective institutional coordination at the national or regional level. In trying to overcome this challenge, significant advances and promising experiences have been made at the basin scale with the establishment or strengthening of Basin committees.

UNIT FOR SUSTAINABLE DEVELOPMENT/GENERAL SECRETARIAT OF THE ORGANIZATION OF AMERICAN STATES

The Unit for Sustainable Development and Environment (USDE) is one of the specialized offices of the General Secretariat of the Organization of American States. Created in 1963 (as Department of Regional Development), it has been in charge of channeling technical assistance programs related to environment and sustainable development, as well as linking policies to projects and acting as a regional forum to address shared environmental and sustainable development goals. In the 1960s, the programs of assistance executed by USDE centered mainly in the compilation, analysis, and development of natural resources. In the 70's, the approach was systematically expanded to include aspects of regional development, such as socio-economic analyses, preparation of regional strategies, investment project formulation, environmental management, and institutional development. Starting in the 1980's, a strong emphasis was given to topics related to energy development and multinational projects, particularly projects of border integration, including river basin sustainable development.

In its 40 years of history, the value of OAS/USDE's technical cooperation efforts are estimated to be approximately US$550 million, which in turn has generated investment proposals of approximately US$5 billion. In the implementation of its technical cooperation projects, OAS/USDE has increasingly acted in collaboration with other international agencies, mainly the United Nations Environment Program, the World Bank, the Inter-American Development Bank, and the Global Environment Facility (GEF).

From 1970 to 1980, almost 50% of OAS financial resources applied to technical cooperation programs executed by USDE were specifically related to water, particularly projects oriented to the development of hydroelectric potential and irrigation. In the 80s, water issues maintained their relative importance, but the approach to these issues substantially changed, shifting from the sectoral bias of the 70s to more integrated approaches, specifically in projects concerning the development and management of multinational river basins. This trend continued during the 90s using the mandates assigned to USDE by OAS governing bodies through the Inter-American Action Program for the Conservation of the Environment (passed in 1991) and Agenda 21 of the World Conference on Environment and Development (1992) as the framework for the Organization's environmental and sustainable development activities.

Today, water issues dominate the Unit's agenda. Of the US$61 million in projects being executed and/or coordinated by USDE, US$56 million (or 93%), are directed toward projects related to the development and/or management of water resources. This includes, among others, the projects "Strategic Action Program for the Bi-national Basin of the Bermejo River"; "Environmental Protection and Sustainable Development of the Guarani Aquifer System"; "Integrated Management of Land-based activities in the São Francisco Basin", "Implementation of Integrated Watershed Management Practices for the Pantanal and Upper Paraguay River Basin", the "Strategic Action Program for the San Juan River Basin", the La Plata Framework Project, in collaboration with the Intergovernmental Coordinating Committee for the La Plata Basin (CIC), and the Amazon Project, with the Organization of the Treaty for Amazon Cooperation (OTCA).

In the Bermejo River basin (shared by the provinces Salta, Jujuy, Chaco, and Formosa in Argentina and the Department of Tarija in Bolivia), the project identified a general overlap of federal and provincial competence and interests between the different organizations and institutions with responsibilities for water resource management. As indicated in the TDA, the establishment of an inter-jurisdictional mechanism for integrated management of the basin was a top priority for both governments. Under the auspices of the Binational Commission (the local executing agency for the GEF-financed project), the project established a Regional Coordinating Committee, with the direct participation of the four Argentinian provinces and the Tarija Prefecture from Bolivia. While the responsibilities or terms of reference for the agreed Committee were initially set up for project implementation, it is gradually evolving into the interjurisdictional entity the project identified as necessary for proper programming and coordination of IWRM actions on the basin scale.

In the São Francisco Basin, the project helped create and consolidate the São Francisco River Basin Committee, which seeks to incorporate an integrated, decentralized, and participative management of the basin to ensure the rational and sustainable development of its land and water resources. The establishment of the Committee also helped put into place the basis for the implementation of water rights and water use payment systems within the basin. Other similar actions carried out by the project include the implementation of a Water Users Councils in the State of Pernambuco, the establishment of a water agency in the Rio Maranhão sub-basin, and the creation of the Salitre River Basin Users Association.

INTERAMERICAN DIALOGUES FOR WATER MANAGEMENT

An activity sponsored and supported by OAS/USDE, together with other institutions, that has provided member states with an opportunity to strengthen partnerships and facilitate the interchange of experiences and technology:

- Dialogue 1 (Miami, USA, 1993). Creates the InterAmerican Water Resources Network-IWRN, linking National Focal Points, academia, private sectors, and civil society groups. Technical Secretariat assigned to OAS/USDE.
- Dialogue 2 (Buenos Aires, Argentina 1996). Defined the bases for Chapter IV of the Plan of Action of Santa Cruz (Water and Coastal Zone), approved by Heads of State of the Americas at the Sustainable Development Summit
- Dialogue 3 (Panama City, Panama, 1999). Provides follow-up to the water-related issues included in the Santa Cruz Action Plan.
- Dialogue 4 (Foz de Iguazú, Brasil, 2001). More than 1100 participants. Prepares the Americas to the Third World Water Forum. Puts forward universal access to water as a basic human right issue, ratified a year later by 147 countries within the United Nations.

In the San Juan project, the governments of Costa Rica and Nicaragua agreed to establish a Binational Executive Committee for Inter-institutional Coordination, facilitating the integration of project results into national and institutional policies. The Committee includes representatives from key policy making national institutions, including the Ministries of Foreign Affairs, ensuring cohesive action and the integration of Project activities at the highest levels of Government, and, correspondingly, by the appropriate sectoral ministries.

In La Plata Basin, the four GEF International Waters projects—the Pantanal and Upper Paraguay River, the Guarani Aquifer System, the Bermejo River Basin, and the Maritime Front—each had strong political support for the creation of appropriate legal and institutional frameworks for the integrated management of water resources. However, there was no provision for the establishment of a common vision for basin development or a wider political and institutional framework, rendering these individually successful efforts ineffectual because of their focus on specific portions of the La Plata Basin. The five participating countries recognized this shortcoming and requested GEF assistance for the establishment and implementation of a common strategic vision for the Basin as a basis for planning, sustainable development, and integrated management of water resources.

STRENGTHENING OF LOCAL INSTITUTIONS FOR NATURAL RESOURCE MANAGEMENT

The decentralization of water management and services generates the need for capacity building, especially at the lower levels of management, where there is a general lack of knowledge and understanding of IWRM concepts. Efforts can include government institutions, regional and local organizations, civil society groups, private sector businesses, and water management community groups. Recently established basin committees also require assistance for the planning and implementation of local action